

Energy and Natural Resources (WAC 463-42-342)

WAC 463-42-342 NATURAL ENVIRONMENT — ENERGY AND NATURAL RESOURCES.

(1) Amount required/rate of use/efficiency - The applicant shall describe the energy and natural resource consumption during both construction and operation of the proposed facilities as rate of use and efficiency that can be achieved during construction and operation.

(2) Source/availability - The applicant shall describe the sources of supply, locations of use, types, amounts, and availability of energy or resources to be used or consumed during construction and operation of the facility.

(3) Nonrenewable resources - The applicant shall describe all nonrenewable resource that will be used, made inaccessible or unusable by construction and operation of the facility.

(4) Conservation and renewable resources - The applicant shall describe conservation measures and/or renewable resources which will or could be used during construction and operation of the facility.

(5) Scenic resources - The applicant shall describe any scenic resources which may be affected by the facility or discharges from the facility.

3.5 ENERGY AND NATURAL RESOURCES (WAC 463-42-342)

3.5.1 INTRODUCTION

Energy and natural resources are consumed during construction and operation of any facility. Because the Phase II project will generate electricity, it will produce many times more energy than is invested in its materials or is used to construct it. Thus, the focus of this section is on the operational aspect of the project.

3.5.2 ENERGY REQUIRED

3.5.2.1 Construction

Cranes, trucks, mobile equipment, and power tools will all consume energy during project construction. Similarly, energy is used during manufacturing of the combined cycle equipment and materials necessary for constructing the new combustion turbine facility. For example, the steel used in much of the equipment requires energy input during the foundry, rolling mill, and fabrication processes. Until the project's detailed design has been completed, estimates of materials content and manufacturing energy use cannot be made; however, the purpose of the combustion turbine facility will be to produce electrical and steam energy over a planned project lifetime of at least 30 years. During this time the Phase II project will produce approximately 171 million megawatt hours of electricity, an amount far in excess of the energy required for production of the materials used in the manufacture and fabrication of the equipment used in the project.

3.5.2.2 Operation

The Phase II project will be fueled by natural gas. A small amount of diesel fuel (#2 distillate) will be on site for the backup generators and fire-water pump. The Phase II project will contract for a firm, long-term (non-interruptible) gas supply and non-interruptible transportation.

Natural gas will be delivered to the Phase II project by the natural gas pipeline installed for Phase I. Natural gas will flow from the pipeline through a metering/pressure-regulating station located on the northern boundary of the project site.

The Satsop CT Project (both phases) will require a maximum of 103,048 pounds per hour of natural gas to fuel each combustion turbine and duct burner, for a maximum consumption of 412,192 pounds per hour for the Phase I and Phase II projects. Annually, a maximum of 3.6 billion pounds of natural gas will be used to fuel both phases, assuming 8,760 hours of operation per unit. The auxiliary boilers will use a maximum of 1,254 pounds per hour of natural gas. Annually, a maximum of 6.3 million pounds of natural gas will be used to fuel the auxiliary boilers assuming 2,500 hours of operation per boiler. Assuming a 30-year project life, the Satsop CT Project will

require a maximum of 108 billion pounds of natural gas to generate a maximum of 342 million megawatt-hours of electricity.

Distillate fuel oil will be used to operate the emergency backup diesel generators. Each diesel generator uses 40.4 gallons of distillate fuel per hour of operation, resulting in a maximum annual consumption rate to operate the diesel generators of 40,400 gallons of fuel oil per year based on 500 hours of operation for each diesel generator.

3.5.3 SOURCE AND AVAILABILITY OF ENERGY AND NATURAL RESOURCES

The project's fuel will be natural gas that will be supplied by a pipeline constructed as part of Phase I. An agreement has been negotiated with Williams Gas Marketing to provide natural gas to the facility. The agreement allows for supplies to be drawn from both domestic and Canadian sources. A final determination of the fuel source will be made when the fuel contract is finalized, after final commitment for construction. The suppliers have sufficient gas available to provide for the needs of the project and other customers over the 30-year life of the project.

3.5.4 NONRENEWABLE RESOURCES

3.5.4.1 Construction

The project will use a variety of natural resources, although in relatively small amounts. The largest quantities will be of steel (from iron ore) and concrete (from aggregate and sand from quarries and pits and cement). Diesel fuel and electrical power will also be consumed during construction.

3.5.4.2 Operation

The main resource consumed by operation of the facility will be natural gas.

In addition, operation of the plants will entail consumption of minor amounts of other materials, such as metals, petroleum-based lubricants, paints, and various chemicals used in the process of operation and normal maintenance of the plants.

3.5.5 CONSERVATION AND RENEWABLE RESOURCES

Compared with many other sources of electricity, the Phase II project will conserve energy. The facility is expected to operate at approximately 54 to 54.5 percent efficiency across the ambient temperature range, compared to 30 to 45 percent efficiency for other types of thermal plants. A discussion of water reuse can be found in Section 2.8.

3.5.6 SCENIC RESOURCES

Impacts to scenic resources are described in Section 5.1 - Land and Shoreline Use, WAC 463-42-362.

As discussed in Subsection 6.1.8 of the PSD Application, four Class I areas are located within 160 kilometers (100 miles) of the project site: Mt. Rainier National Park, Goat Rocks Wilderness Area, Alpine Lakes Wilderness Area, and Olympic National Park. The Class I area closest to the proposed Satsop CT Project is Olympic National Park, located approximately 58 kilometers (35 miles) to the northeast. Other Class I areas considered in the modeling analysis are Pasayten Wilderness, Glacier Peak Wilderness, Mt. Adams Wilderness, and the Mt. Hood Wilderness. At the request of the USFS, the analysis also considers impacts to the Mt. Baker Wilderness and the Columbia River Gorge National Scenic Area (CRGNSA). Results of the CALPUFF dispersion modeling performed for the proposed project show that concentrations of pollutants from both phases of the project are well below the Class I allowable increment for the nearest Class I area and thus are not expected to have a significant impact upon these scenic resources. Additionally, the regional haze analyses show minimal impact from the project.

Visual impacts of the facility upon the existing regional landscape are not expected to be significant. Even though project buildings and ancillary facilities will not be seen, a small portion of the emission stacks may be visible from some viewpoints in the Chehalis River Valley. The WNP-3 and WNP-5 cooling towers, juxtaposed against the horizontal profile of the background hills, are objects of attention for viewers looking across the open plain of the Chehalis River Valley. These cooling towers may be removed in the future. If visible, the presence of small portions of the project's emission stacks will be an additional, but minor, element to the west of the existing and taller cooling towers of WNP-3 and WNP-5. Depending on the time of year and weather conditions, attention to the stacks could be more pronounced when a vapor plume is present.

The impact to local residents adjacent to the site is expected to be slightly negative but not significant, due to the overall visual compatibility of the project with the existing conditions. Even though the emission stacks and the higher plant structures will be visible, the Phase II facility will be an expansion of the Satsop CT Project which already provides a context of low visual quality. The vegetated screening berm and turbine equipment enclosures will also reduce visual impacts.